

IN THE SPECIFICATION

Delete the first sentence of the specification directly following the title, which was added in the March 23, 2001 Supplemental Preliminary Amendment, and substitute therefor the following paragraph:

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This application is a divisional of United States Application No. 09/045,360, filed March 19, 1998, now United States Patent 6,207,880, which is a continuation of International Patent Application No. PCT/EP96/04109, filed September 19, 1996.

IN THE CLAIMS

~~Cancel claims 49 and 63 without prejudice.~~

Substitute claims 48, 51, 53, 54, 60, 61, 65, 68, 73, 81, 92 and 93 with rewritten claims 48, 51, 53, 54, 60, 61, 65, 68, 73, 81, 92 and 93 as follows:^{*}

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48. (Twice Amended) An isolated DNA molecule encoding an antisense-RNA complementary to a transcript of a nucleic acid molecule encoding a protein which is present in plant cells in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*, said nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleotide sequence that encodes a protein having the amino acid sequence of SEQ ID NO: 2;

* Applicants enclose herewith a copy of claims 48, 51, 53, 54, 60, 61, 65, 68, 73, 81, 92 and 93 marked up pursuant to 37 C.F.R. § 1.121(c)(1)(ii) to show changes made.

- C2*
- (b) a nucleic acid molecule comprising the coding region of the nucleotide sequence of SEQ ID NO: 1;
- (c) a nucleic acid molecule that hybridizes to the nucleic acid molecule of (a) or (b) under stringent conditions; *wherein the n^ob of (c) encodes: X.*
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to *the* nucleic acid molecule of (a), (b) or (c); and
- the*
- (e) a fragment or allelic variant of *a* nucleic acid molecule of (a), (b), (c), or (d), wherein the fragment or allelic variant encodes a polypeptide that is present in plant cells in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*,
- wherein said antisense-RNA is capable of inhibiting the expression of nucleic acid molecules encoding said protein when expressed in a plant cell.

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51. (Twice Amended) A vector comprising the DNA molecule according to claim 48 or 99.

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53. (Twice Amended) A host cell comprising the DNA molecule according to claim 48 or 99 or comprising a vector comprising said DNA molecule.

54. (Twice Amended) A transgenic plant cell comprising the DNA molecule according to claim 48 or 99, wherein said DNA molecule is operably linked to regulatory elements ensuring transcription in a plant cell.

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60. (Twice Amended) An RNA molecule obtained by transcription of the DNA molecule according to claim 48 or 99.

61. (Twice Amended) A method for producing a transgenic plant cell synthesizing a modified starch comprising the step of reducing in the cell the amount of a protein which is present in the plant cell in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*, said protein encoded by a nucleic acid molecule selected from the group consisting of:

- (a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;
- (b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;
- (c) a nucleic acid molecule hybridizing to *the* nucleic acid molecule of (a) or (b) under stringent conditions; *wherein the molecule of (c) encodes... the*
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to *the* nucleic acid molecule of (a) or (b); and
- (e) a fragment, derivative or allelic variant of *the* nucleic acid molecule of (a), (b), (c), or (d), wherein the fragment, derivative or allelic variant encodes a polypeptide that is present in plant cells in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*;

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wherein said reduction of the amount of said protein results in the plant cell producing a modified starch.

C6
65. (Twice Amended) The method of claim 61 or 62, wherein the enzyme activity of at least one further enzyme involved in the starch biosynthesis and/or modification is reduced.

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68. (Twice Amended) A plant cell obtainable by the method of claim 61 or 62.

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73. (Twice Amended) A propagation material of the plant according to claim 69, wherein the propagation material comprises the plant cell.

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81. (Twice Amended) The transgenic plant cell of claim 54 wherein the amount of a protein is reduced in the transgenic plant cell when compared to the wild-type plant cell, wherein the protein is present in the plant cell in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*, and wherein the protein is encoded by a nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule encoding a protein with the amino-acid sequence indicated in SEQ ID NO: 2;

(b) a nucleic acid molecule comprising the coding region of the nucleotide sequence indicated in SEQ ID NO: 1;

- the*
- (c) a nucleic acid molecule hybridizing to a nucleic acid molecule of (a) or (b) under stringent conditions; *wherein the na of (c) is a casser... ✓*
- (d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a) or (b); and
- the*
- (e) a fragment, derivative or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d), wherein the fragment, derivative or allelic variant encodes a polypeptide that is present in plant cells in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*.

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92. (Amended) A propagation material of the plant according to claim 88, wherein the propagation material comprises the plant cell.

93. (Amended) A propagation material of the plant according to claim 89, wherein the propagation material comprises the plant cell.

Add claims 96-106 as follows:

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96. (Added) The transgenic plant of claim 69, wherein the plant is selected from the group consisting of: rye, barley, oats, wheat, rice, maize, peas and cassava.

97. (Added) The transgenic plant of claim 88, wherein the plant is selected from the group consisting of: rye, barley, oats, wheat, rice, maize, peas and cassava.

98. (Added) The transgenic plant of claim 89, wherein the plant is selected from the group consisting of: rye, barley, oats, wheat, rice, maize, peas and cassava.

99. (Added) The DNA molecule of claim 48, wherein the DNA molecule is at least 15 basepairs and less than 2500 basepairs.

100. (Added) The DNA molecule of claim 99, wherein the DNA molecule is more than 100 basepairs.

101. (Added) The DNA molecule of claim 100, wherein the DNA molecule is more than 500 basepairs.

102. (Added) An isolated DNA molecule encoding an antisense-RNA complementary to a transcript of a nucleic acid molecule encoding a protein which is present in plant cells in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*, said nucleic acid molecule selected from the group consisting of:

(a) a nucleic acid molecule comprising a nucleotide sequence that encodes a protein having the amino acid sequence of SEQ ID NO: 2;

(b) a nucleic acid molecule comprising the coding region of the nucleotide sequence of SEQ ID NO: 1;

(c) a nucleic acid molecule that has at least 40% sequence identity to the nucleic acid molecule of (a) or (b);

(d) a nucleic acid molecule the sequence of which is degenerate as a result of the genetic code to a nucleic acid molecule of (a), (b) or (c); and

(e) a fragment or allelic variant of a nucleic acid molecule of (a), (b), (c), or (d), wherein the fragment or allelic variant encodes a polypeptide that is present in plant cells in starch granule-bound form as well as in soluble form and that is involved in the phosphorylation of starch when expressed in plants and/or that increases the phosphorylation of glycogen when expressed in *E. coli*,

wherein said antisense-RNA is capable of inhibiting the expression of nucleic acid molecules encoding said protein when expressed in a plant cell.

103. (Added) The DNA molecule of claim 102, wherein the nucleic acid molecule of (c) has at least 60% sequence identity to the nucleic acid molecule of (a) or (b).

104. (Added) The DNA molecule of claim 103, wherein the nucleic acid molecule of (c) has at least 80% sequence identity to the nucleic acid molecule of (a) or (b).

105. (Added) The DNA molecule of claim 104, wherein the nucleic acid molecule of (c) has at least 90% sequence identity to the nucleic acid molecule of (a) or (b).

106. (Added) The DNA molecule of claim 105, wherein the nucleic acid molecule of (c) has at least 95% sequence identity to the nucleic acid molecule of (a) or (b).